PATENT COOPERATION TREATY

INTERNATIONAL SEARCHING AUTHORITY

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			(PCT Rule 43bis.1)	
		Date of mailing (day/month/year) 27	7 DECEMBER 2004 (27.12.2004)	
Applicant's or agent's file reference PCT04-044	ent's file reference		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/KR2004/002450	International filing date (23 SEPTEMBER 2	(day/month/year) Priority date(day/month/year)		
International Patent Classification (IPC)	or both national classificat	ion and IPC		
IPC7 F28D 15/02				
Applicant LG Cable Ltd. et al				
LAG Cable Ltd. et al		·		
Box No. IV Lack of unity of X Box No. V Reasoned statem citations and exp Box No. VI Certain documents	ent of opinion with regard f invention nent under Rule 43bis.1(a) lanations supporting such ints cited in the international applic	to novelty, inventive st (i) with regard to novel a statement	ep and industrial applicability ty, inventive step or industrial applicability;	
other than this one to be the IPEA and opinions of this International Searching If this opinion is, as provided above, or	authority ("IPEA") except the chosen IPEA has noting Authority will not be so considered to be a written of appropriate, with amendments piration of 22 months from 220.	that this does not apply fied the International Bu considered. pinion of the IPEA, the ents, before the expiration	where the applicant chooses an Authority breau under Rule 66.1 bis(b) that written applicant is invited to submit to the on of 3 months from the date of mailing	
Name and mailing address of the ISA/KR Korean Intellectual Property O		Authorized officer	6	



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International application No.

PCT/KR2004/002450

Box No. I Basis of this opinion					
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 With regard to the language, this opinion has been of which it was filed, unless otherwise indicated under 	established on the basis of the international application in the language in this item.				
, which is the langu	s of a translation from the original language into the following language large of a translation furnished for the purposes of international search (under				
Rules 12.3 and 23.1(b)).					
With regard to any nucleotide and/or amino aci claimed invention, this opinion has been established	id sequence disclosed in the international application and necessary to the lon the basis of:				
a. type of material					
a sequence listing					
table(s) related to the sequence listing					
b. format of material					
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c. time of filing/furnishing					
contained in the international application as					
filed together with the international applicat					
furnished subsequently to this Authority for	the purposes of search.				
	ion or copy of a sequence listing and/or table relating thereto has been				
	the information in the subsequent or additioanl copies is identical to that				
in the application as filed or does not go beyond	the application as filed, as appropriate, were furnished.				
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4. Additional comments:					
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2004/002450

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Novelty (N)	Claims 1-13	YES
	Claims	NO
Inventive step (IS)	Claims	YES
	Claims 1-13	NO
Industrial applicability (IA)	Claims 1-13	YES
	Claims	NO

2. Citations and explanations:

Reference is made to the following documents:

D1: JP 2000-161878 A
D2: JP 2003-179189 A
D3: JP 61-66086 A
D4: KR 10-0290461 B1

Claims 1-13 are considered to lack an inventive step for the following reasons:

Claim 1 relates to a flat plate heat transfer device comprising: a thermal-conductive flat case, one layer of mesh installed in the flat case and configured so that wires are woven to be alternately crossed up and down, wherein a dispersion channel of a vaper is formed along a surface of the wire from a cross point of the mesh near a heat source, and a flow, channel of a liquid is formed by means of a capillary phenomenon along a length direction of the wire from a mesh lattice near a heat emitting unit to a mesh lattice near the heat source.

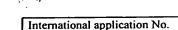
D1 discloses a planar heat pipe to cool heat generating components in various electronic apparatuses efficiently by arranging a mesh wick layer comprising at least a sheet of mesh wick in a housing having upper and lower plates composed of a foil or a thin plate and encapsulating a working fluid in the housing.

D2 discloses a thin heat sink, and its packaging structure, suitable for cooling heat generating bodies, e.g. electronic components or optical components, mounted with high density.

D3 relates to a heat pipe which has no reversible heat transfer characteristic and which is capable of transferring heat only in one direction, by the provision of a wick made of a shape memory alloy.

(Continued on Supplemental Sheet.)





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In case the space in any of the preceding boxes is not sufficient. Continuation of:

Box V.

D4 relates to a heat pipe having braiding wick structure to improve performance by increasing capillarity with simple structure, and to simplify the manufacturing process by forming a wick with a braiding wire spirally in the heat pipe.

Following are comparisons between the present application and D1 which is considered to be the closest prior art:

The present application is the same as D1 in that one layer of mesh configured so that wires are woven to be alternately crossed up and down is placed between upper and lower plates. The dispersion channel of a vapor and the flow channel of a liquid of the present invention are anticipated from the one-layered crossed mesh of D1, and no particular difference in the operational effect is acknowledged for the present invention.

Claims 2-4 limit the numerical values of the diameter of the mesh of claim 1 and the height of the flat case of claim 1. Said numerical values are not considered to have any critical effect.

Claim 5 defines the flat case of claim 1 as consisting of an upper plate and a lower plate, which is already shown in Figs. 1 and 2 of D1.

Claim 6 limits the direction of a lengthwise wire of claim 1: the direction of the lengthwise wire is the same as the direction of the heat transfer. Said feature of the wire is considered to be obvious to a person skilled in the art.

Claim 7 limits the material of the flat case of claim 1: the flat case is made of electrolytic copper foil, and the inner side of the case is formed of prominences and depressions of the electrolytic copper foil. It would be obvious to a person skilled in the art to derive said material of the flat case from D1 in which the upper and lower plates are made of copper.

Claims 8-11 limit the materials of the mesh or case. Copper among said materials is the same as the material shown in D1.

The method for sealing the flat case according to claim 12 is considered to be a commonly used method.

The kinds of refrigerants according to claim 13 are considered to be commonly used kinds of refrigerants.

Therefore, the subject matter of claim 1 and its dependent claims 2-13 does not meet the requirement of inventive step.